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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,349	10/11/2001	Thomas S. Moore	705699US1	1359

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EXAMINER

THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

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DATE MAILED: 01/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/976,349

Applicant(s)

MOORE ET AL.

Examiner

Camie S Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Objections***

2. Claims 8, 9 and 11 are objected to because of the following informalities: There is a period after the word "of" in claims 8, 9 and 11. Examiner suggests deleting the period after the word "of". Appropriate correction is required.
3. Claim 18 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 16. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim

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to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2-4 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 15 are rendered indefinite because of the term "capable". The claims do not distinctly point out that the joint structure maintains the cross structure during a molding process. Claims 3 and 4 recite the limitation "multi-dimensional array" in first line of claims 3 and 4. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1, 2, 5-6, 10-11 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Segal et al., U.S. Patent Number 3,920,879.

Segal discloses long glass fiber reinforcement wherein the fibers are intertwined or agglomerated long glass fibers held together by adhesive resinous binders or mechanically bound by stitching as per instant claims 1 and 2 (see abstract and column 4, lines 16-44). In addition, the reference discloses that the polymer used in the reinforcement is polyamide as per instant claims 10 and 11 (see column 4, lines 16-44). Using glass fibers in a polyamide resin would produce an aspect ratio of less than 5, as this is a physical property of the fibers in the resin matrix. Therefore, this feature is inherent.

Claims 5 and 16 are product by process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art was made by a different process.

8. Claims 1, 5-7, 9 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Moghe et al., U.S. Patent Number 5,127,783.

Moghe discloses carbon fiber reinforced composites wherein the carbon fibers can be twisted as per instant claims 1 and 6 (see column 3, lines 42-68 and claim 19). In addition, the reference discloses that the binder system includes an organic resin such as polyimide resins as per instant claims 7 and 9 (see column 7, lines 21-46). Using carbon fibers in a polyimide resin would

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produce an aspect ratio of less than 5, as this is a physical property of the fibers in the resin matrix. Therefore, this feature is inherent.

Claims 5 and 16 are product by process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art was made by a different process.

9. Claims 1-2 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Raley, U.S. Patent Number 4,761,322.

Raley discloses a laminated fibrous composite wherein a second fibrous layer is bonded to a second fibrous layer and the suitable bonding medium is an epoxy-resin based adhesive as per instant claims 1-2, 7-8 and 15 (see column 5, lines 50-68; column 7, lines 36-45 and column 9, lines 1-10). Raley also discloses that the fibers used can be Kevlar, glass and carbon as per instant claims 6 and 17 (see column 8, lines 3-20). Using glass, carbon or Kevlar fibers in epoxy resin would produce an aspect ratio of less than 5, as this is a physical property of the fibers in the resin matrix. Therefore, this feature is inherent.

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*Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 5-6 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raley, U.S. Patent Number 4,761,322 in view of Tatarchuck et al., U.S. Patent Number 5,102,745.

Raley discloses a laminated fibrous composite wherein a second fibrous layer is bonded to a second fibrous layer and the suitable bonding medium is an epoxy-resin based adhesive as per instant claim 1 (see column 5, lines 50-68; column 7, lines 36-45 and column 9, lines 1-10).

Raley also discloses that the fibers used can be Kevlar, glass and carbon as per instant claim 6 (see column 8, lines 3-20). Raley does not disclose the type of multi-dimensional fiber array.

Tatarchuck teaches mixed fiber composite structures wherein at least the first fiber has a plurality of bonded junctions at the first fiber crossing point (see abstract and column 3, lines 65-68). In Figures 1A-1D of Tatarchuck, triangular and square structures are formed as per instant claims 3 and 4. Additionally, the Tatarchuck reference teaches that the bonding of the fibers may be done by thermosetting, which would include using a thermoformable polymer as per instant claim 10 (see column 6, lines 20-29).

Neither reference discloses the height to width ratio of the coupled fiber reinforcement structure as per instant claim 14. The height to width ratio affects the strength and flexibility of the multi-dimensional array. This is an optimizable feature. Discovery of optimum values of result

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effective variables involves only routine skill in the art in re Boesch, 617 F2. 2d 272, 205 USPQ 215 (CCPA). Therefore, it would have been obvious to one of ordinary skill in the art to have a height to width ratio of the coupled fiber reinforcement structure be about one in order to have increased strength and flexibility for the fibrous array.

Neither reference discloses the aspect ratio of the coupled fiber reinforcement structure as per instant claim 1. Using glass, carbon or Kevlar fibers in epoxy resin would produce an aspect ratio of less than 5, as this is a physical property of the fibers in the resin matrix. Therefore, this feature is inherent.

Claims 5 and 16 are product by process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art was made by a different process.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (703) 305-4488. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly, can be reached at (703) 308-0449. The fax phone numbers for the Group are (703) 872-9310 {before finals} and (703) 872-9311 {after finals}.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

